Ejuſdem Doctoris *WALLISII*
Non-nulla,
De *Centro Gravitatis Hyperbolæ*,
Prægreſſæ Epiſtolæ ſubnexa.

Tandem vero, ne nihil habeas præter Confutatum Hobbium, *(quæ fortè non tanti res eſt, ut de ea multum ſis ſolicitus ;) libet hic annectere*, De Centro Gravitatis Hyperboles *nonnihil* ; *(præterito Anno conſcriptum ;) Miſcellaneis illis, ſi placet, ſubjungendum, quæ habemus ad* Prop. 1. Cap. XV. De Motu. *Nempe*, pag. 753. l. 26. ibidem.

Poſt §. 10. *Hæc addantur.*

11. *Etiam hoc addo* Spatii Hyperbolici, ſive interioris ſive exterioris, *non quidem ipſum Gravitatis Centrum, ſed Rectam in quâ eſt, ſeu* Axem Æquilibrii exhiberi poſſe, etiamſi ignoretur Plani Magnitudo.

Vid. Tab. II Fig. 4. *Eſto enim expoſita Hyperbola H h V, Centrum A, axis A X, vertex V, latus rectum* L, *axis tranſverſus* T=2S, *axes intercepti VD*=D, *Vd*=d, *ordinatim-applicatæ HD*=H, *hd*=h, *axis conjugatus A*Δ, *ad quem ordinatim-applicatæ H*Δ=K, *hδ*=k, *aſymptotarum alteri Aσ parallela HS*=B *ad alteram AS*=A *ordinatim-applicetur, & VO ad AO*=E, *& h s ad A s* ; *atq; intelligatur S Aσ angulus rectus* ; *ſitque OS* (=A-E) =O.

Sunt (*propter* $h = \surd : dL + \frac{L}{T}d^2 :$) *ordinatarum ad axem ſemi-quadrata, ſeu momenta reſpectu AD*, $\frac{1}{2}Ld + \frac{L}{2T}d^2$; *&* (*propter* $\text{Omn} : d, = \frac{1}{2}D^2$, *&* $\text{Omn} . d^2, = \frac{1}{3}D^3$,) *ſimul omnia, ſeu Momentum totius HVD reſpectu AX*, $\frac{1}{4}LD^2 + \frac{L}{6T}D^3$.

Idem (*propter* $k = \surd : S^2 + \frac{T}{L}h^2 :$) *ordinatarum ad axem conjugatum ſemi-quadrata, ſeu momenta reſpectu A*Δ, $\frac{1}{2}S^2 + \frac{T}{2L}h^2$; *&* (*propter* $\text{Omn} . h^2, = \frac{1}{3}H^3$,) *ſimul omnia, ſeu totius AVH*Δ, *momentum reſpectu A*Δ, $\frac{1}{2}ſ^2H + \frac{T}{6L}H^3$. *Quod ex* (*totius ADH*Δ *momento*) $\frac{1}{2}K^2H = \frac{1}{2}S^2H + \frac{T}{2L}H^3$ *ſubductum, relinquit reſidui HVD, reſpectu A*Δ, *momentum* $\frac{T}{3L}H^3$.

Ergo (*propter diſtantias momentis proportionales*,) *in DH, ſumptâ DG, quæ ſit ad AD, ut* $\frac{1}{4}LD^2 + \frac{T}{3L}D^3$ *ad* $\frac{T}{3L}H^3$; *hoc eſt*, $3TL^2D^2 + 2L^2D^3$ *ad* $4T^2H^3$; *erit in* (*junctâ*) *AG, ipſius HVD centrum Gravitatis* ; *utpote cujus puncta ſingula in eâ ratione diſtant ab A D, A* Δ.

Idem obtinebitur ope momenti ipſius HVD reſpectu Aſymptotæ Aσ.

Eſt (*per* § *D* Prop. 31. Cap. 5.) *ipſius OVHS, reſpectu Aσ, momentum* ABO. *Eſt autem Trianguli ASX* (= $\frac{1}{2}A^2$,) *reſpectu ejuſdem Aσ, momentum* $\frac{1}{3}A^3$; *& Trianguli AOV momentum* $\frac{1}{3}E^3$; *poſitiſque HX*(=A−B)=X, *& DB* (*parallelâ AS*) =Y, *adeoque* HDX=$\frac{1}{2}$XY, *hujuſque ab Aσ diſtantiâ centri Gravitatis* A−$\frac{1}{3}$Y, *erit Trianguli HDX, reſpectu Aσ, momentum* $\frac{1}{2}AXY - \frac{1}{6}XY^2$. *Ergo* (*propter HVD*=*ASX*−*AOV*−*OVHS*−*HDX*) *ipſius HVD, reſpectu Aσ, momentum* $\frac{1}{3}A^3 - \frac{1}{3}E^3 - ABO - \frac{1}{2}AXY + \frac{1}{6}XY^2$.

Ergo (propter diſtantias momentis proportionales) in DH *ſumptâ* DQ, *quæ ſit ad* AS, *ut* $\frac{1}{4}LD^2+\frac{L}{6T}D^3$ *ad* $\frac{1}{3}A^3-\frac{1}{3}E^3-ABO-\frac{1}{2}AXY+\frac{1}{6}XY^2$; *ductâque* QK *parallelâ* AX *occurrente* SX *in* K; *erit in (juncta)* AK, *(utpote cujus ſingula puncta in ea ratione diſtant ab* AD, $A\sigma$,*) Centrum gravitatis* HVD. *Quæ quidem* AK *eſt eadem poſitione recta cum* AG; *quoniam utraq; tum per* A *tranſit, tum per Centrum Gravitatis* HVD.

Similiter (ob eandem cauſam,) in ΔH *ſumpta* ΔL, *quæ ſit ad* AS, *ut* $\frac{T}{3L}H^3$ *ad* $\frac{1}{3}A^3-\frac{1}{3}E^3-ABO-\frac{1}{2}AXY+\frac{1}{6}XY^2$; *ductaque* LK *parallelâ* $A\Delta$, *occurrente* SX *in* K; *erit in (juncta)* AK *(cujus utique ſingula puncta in ea ratione diſtant ab* $A\Delta$, $A\sigma$,*) centrum gravitatis* HVD. *Erit autem hoc* K *idem quod prius, ob cauſam modò inſinuatam.*

12. *Simili proceſſu utendum in ſpatio exteriori* $OVHS$.

Eſt enim (ut jam oſtenſum) hujus, reſpectu $A\sigma$, *momentum* ABO.

Item, reſpectu AX, *Trianguli* $ASX=\frac{1}{2}A^2$ *eſt (propter centri ab* AX *diſtantiam* $\frac{1}{3}A\sqrt{\frac{1}{2}}$*) momentum* $\frac{1}{6}A^3\sqrt{\frac{1}{2}}$; *& ſimiliter, Trianguli* AOV, *momentum* $\frac{1}{6}E^3\sqrt{\frac{1}{2}}$; *Triangulique* $HDX=\frac{1}{2}XY$ *(propter diſtantiam* $\frac{1}{3}H$*) momentum* $\frac{1}{6}XYH$; *ipſiuſque* HVD *(ut modò)* $\frac{1}{4}LD^2+\frac{L}{6T}D^3$. *Ergo (propter* $OVHS=ASX-AOV-HDX-HVD$,*) ipſius* $OVHS$, *reſpectu* AX, *momentum* $\frac{1}{6}A^3\sqrt{\frac{1}{2}}-\frac{1}{6}E^3\sqrt{\frac{1}{2}}-\frac{1}{6}XYH-\frac{1}{4}LD^2-\frac{L}{6T}D^3$.

Ergo (propter diſtantias momentis proportionales,) in DH, *ſumpta* DI, *quæ ſit, ad* AS, *ut* $\frac{1}{6}A^3\sqrt{\frac{1}{2}}-\frac{1}{6}E^3\sqrt{\frac{1}{3}}-\frac{1}{6}XYH-\frac{1}{4}LD^2-\frac{L}{6T}D^3$ *ad* ABO: *ductaque* IF *parallelâ* AX, *occurrente* SX *in* F; *erit in (juncta)* AF *(cujus puncta ſingula in ea ratione diſtant ab* AX, $A\sigma$*) centrum gravitatis* $OVHS$.

Idem obtinebitur comparando ejuſdem $OVHS$ *momenta reſpectu* $A\sigma$, *&* $A\Delta$; *vel* AX, *&* $A\Delta$; *eandem autem* AF *prodire neceſſe erit, ut quæ tranſire debeat tum per* A, *tum per ipſius* $OVHS$ *centrum gravitatis.*

13. *Simili item proceſſu utendum eſt in ſpatio exteriori* $AVH\Delta$.

Eſt enim (ut modò) hujus reſpectu $A\Delta$ *momentum* $\frac{1}{2}S^2H+\frac{T}{6L}H^3$.

~~*Idem*~~ t, *reſpectu* AX; *rectanguli* $ADH\Delta$ *momentum* $\frac{1}{2}KH^2$; *unde ſubducto ipſius* HVD *momento* $\frac{1}{4}LD^2+\frac{L}{6T}D^3$; *habebitur ipſius* $AVH\Delta$ *reſpectu* AX *momentum* $\frac{1}{2}KH^2-\frac{1}{4}LD^2-\frac{L}{6T}D^3$.

Ergo, in ΔH, *ſumpta* ΔM, *quæ ſit ad* DH, *ut* $\frac{1}{2}S^2H+\frac{T}{6L}H^3$ *ad* $\frac{1}{2}KH^2-\frac{1}{4}LD^2-\frac{L}{6T}D^3$; *erit in (juncta)* AM *(cujus ſingula puncta in ea ratione diſtant ab* $A\Delta$, AX,*) centrum gravitatis* $AVH\Delta$.

Idemque obtinebitur comparatis ejuſdem momentis reſpectu $A\Delta$, *&* $A\sigma$; *vel reſpectu* AX, *&* $A\sigma$: *eandem autem* AM *prodire neceſſe erit, ob cauſam ante inſinuatam: Ut non ſit ſpes inde, ob duas ejuſmodi rectas, ſe mutuò decuſſantes, ipſum centrum obtinendi, abſque Plani magnitudine.*

Si verò in his omnibus vel non ſit $SA\sigma$ *ang. rectus; vel Hyperbola, ~~vel~~ Scalena (ſumptâ Diametro quavis aliâ loco Axis* AX;*) ſimilis adhibenda erit accommodatio cum ea, quam de Scalenis inſinuavimus ad* § K prop. 31. c. 5.

Dab. Oxon. Aug. 31. 1672.

Trans. N°. 27.

Tab. II.

Fig. I.

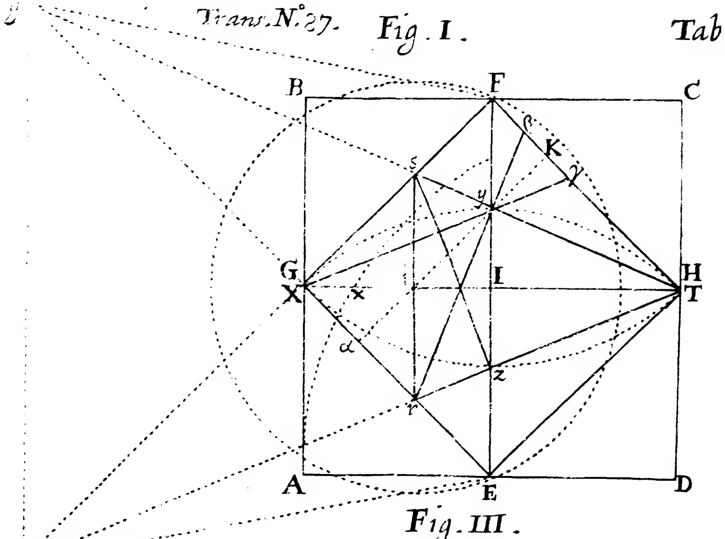

Fig. II.

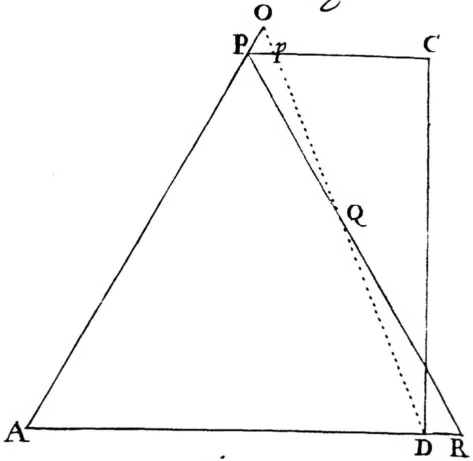

Fig. III.

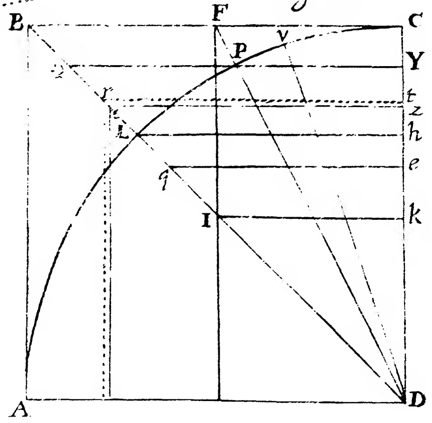

Fig. IV.